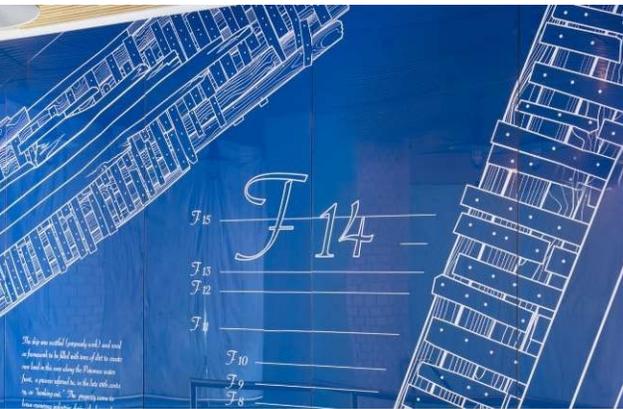


City of Alexandria, Virginia

Historic Ship Timbers Stabilization Project

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City Archaeologist
Alexandria Archaeology
March 2022





African American Heritage Trail

North Waterfront Route from the Foot of King Street



Alexandria Archaeological Commission

America's First Archaeological Commission

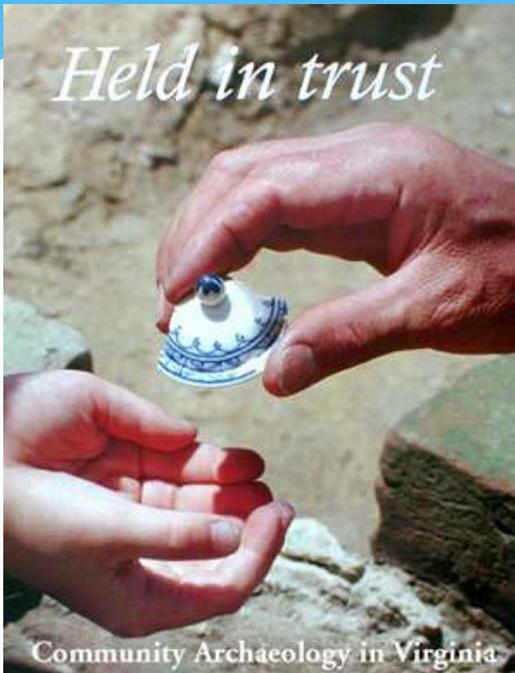




Outline

- 1) Overview of Historic Alexandria/Alexandria Archaeology
- 2) Background on Waterfront Archaeology Excavations
- 3) Update on Ship from Hotel Indigo Site
- 4) Waterfront Museum Feasibility Study
- 5) Update on Ships from Robinson Terminal South Site
- 6) Historic Ship Timbers Stabilization Update
- 7) Next Steps
- 8) Contact Information

Office of Historic Alexandria Alexandria Archaeology Established 1984



- Alexandria Archaeology is a division of Historic Alexandria
- Museum on the 3rd floor of the Torpedo Factory – also serves as classroom and lab
- Supported by the AAC and FOAA



*Alexandria
Archaeological
Commission*

America's First Archaeological Commission



Alexandria's Historic Waterfront

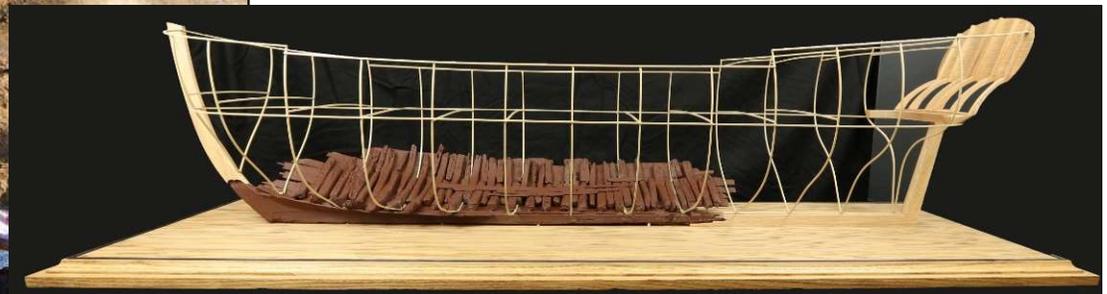


Modern
Shoreline

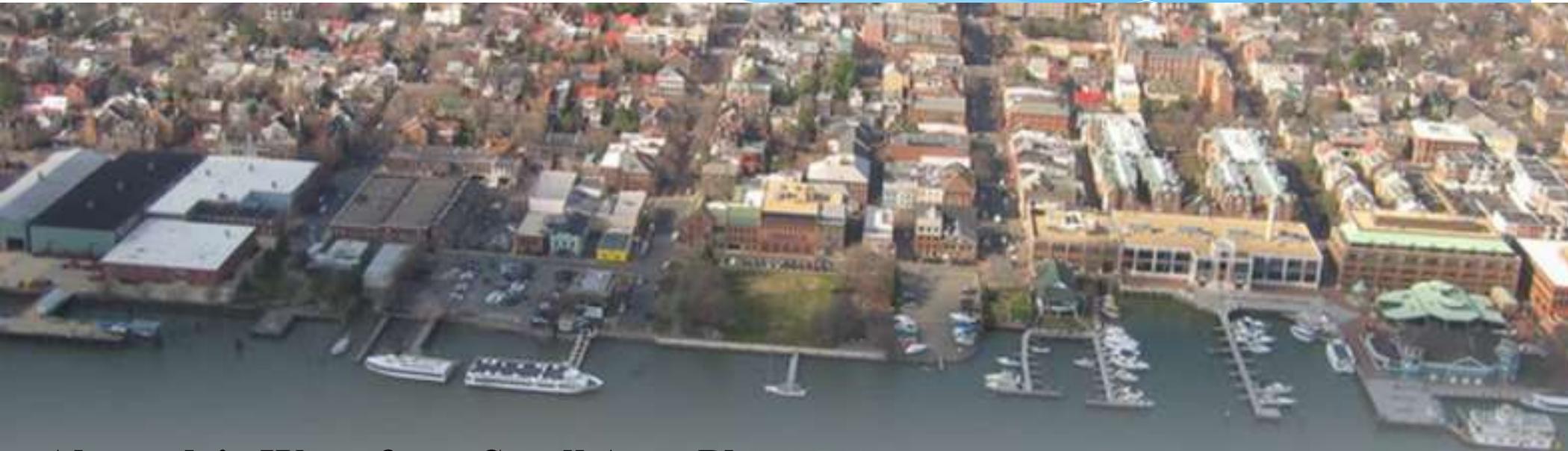
Hotel Indigo Site
44AX229

Robinson Terminal South Site
44AX235

Ship from the Hotel Indigo Site



Background



Alexandria Waterfront Small Area Plan **Alexandria Waterfront History Plan**

- “identifying locations for a history center and other cultural anchors”
- “establishing a Southern Cultural Anchor and History Center in the waterfront area”
- “commission study of best location for Archaeology Museum/History Center”



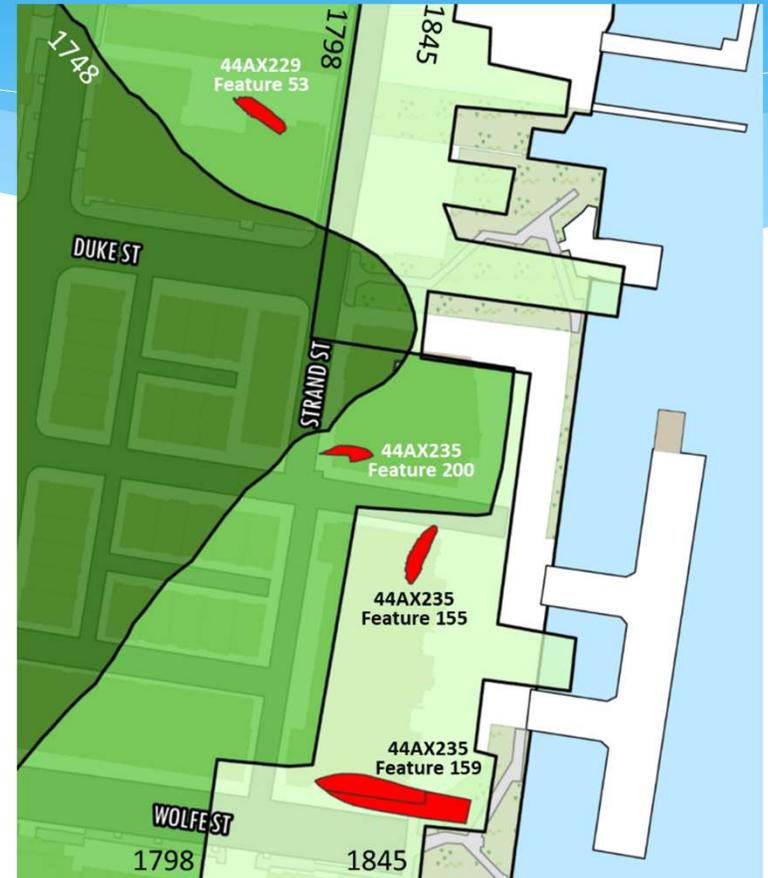
Ship from the Hotel Indigo Site

Draft Components: Museum Feasibility Study

- Distill Existing Planning Documents
- Engage Stakeholders including Commissions
- Develop Building Requirements (Uses/Size)
- Analyze Potential Locations and Alternatives (New Construction, Existing Buildings, Storage Facilities)
- Measure Area/Visitor Demographics
- Explore Educational Opportunities and Partnerships
- Sustainability, Business, Funding Model
- Capital Cost Projections
- Make Recommendations



Update: Three 18th-Century Ships Robinson Terminal South Site



- 3 ships and a 15' section of wharf; 1000+ timbers
- Warehoused in 9 pools of water

Update: Three 18th-Century Ships Robinson Terminal South Site

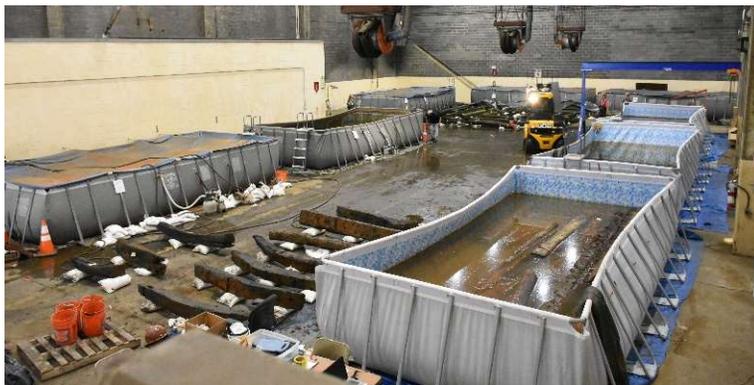


Phase 1 (Ongoing since FY19)
Stabilization – In wet-storage at Bus Barn

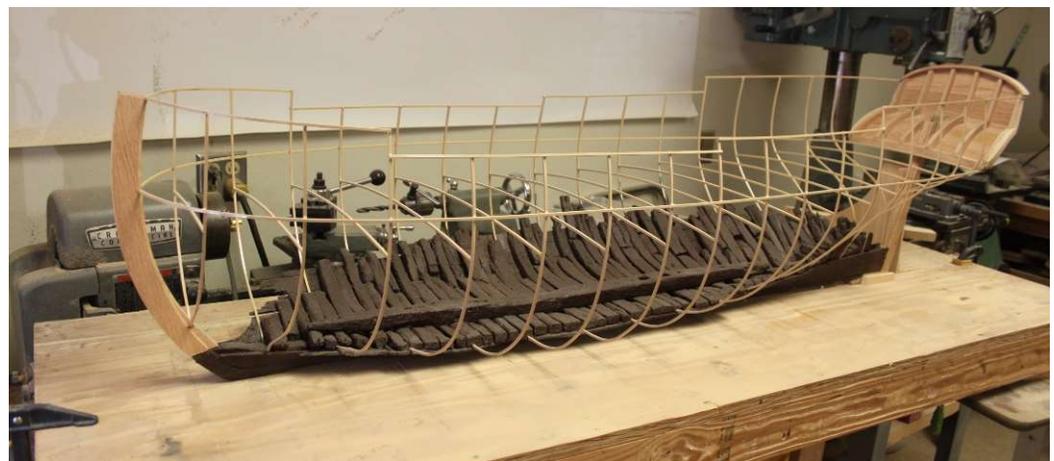
Phase 2 (FY20)
Documentation – 3D laser scanning and modeling

Phase 3 (Spring 2022)
Storage and Selective Conservation – With the goal to preserve the timbers, free from damage or decay

Update: Three 18th-Century Ships Robinson Terminal South Site



3D Laser Scanning Ship Timbers





Historic Ship Timbers Stabilization

Phase 3 Storage and Selective Conservation – Options

1) Storage

2) Conservation

Historic Ship Timbers Stabilization



Phase 3 – Storage Options Considered

**Team assessed specific options for these alternatives:
OHA, DPI, TES, Parks and Rec, GS**

Type of Storage or Next Step	Locations
Submerging in Pond Storage	Ben Brenman Pond
	Lake Cook
	Windmill Hill Park
Rebury Underground Storage	Four Mile Run Park
	Hensley Park
Continued Tank Storage	Victory Center Parking Lot
	Commercial Warehouse
Full Conservation	Climate-controlled Storage or Exhibition

Historic Ship Timbers Stabilization

Phase 3 – Storage

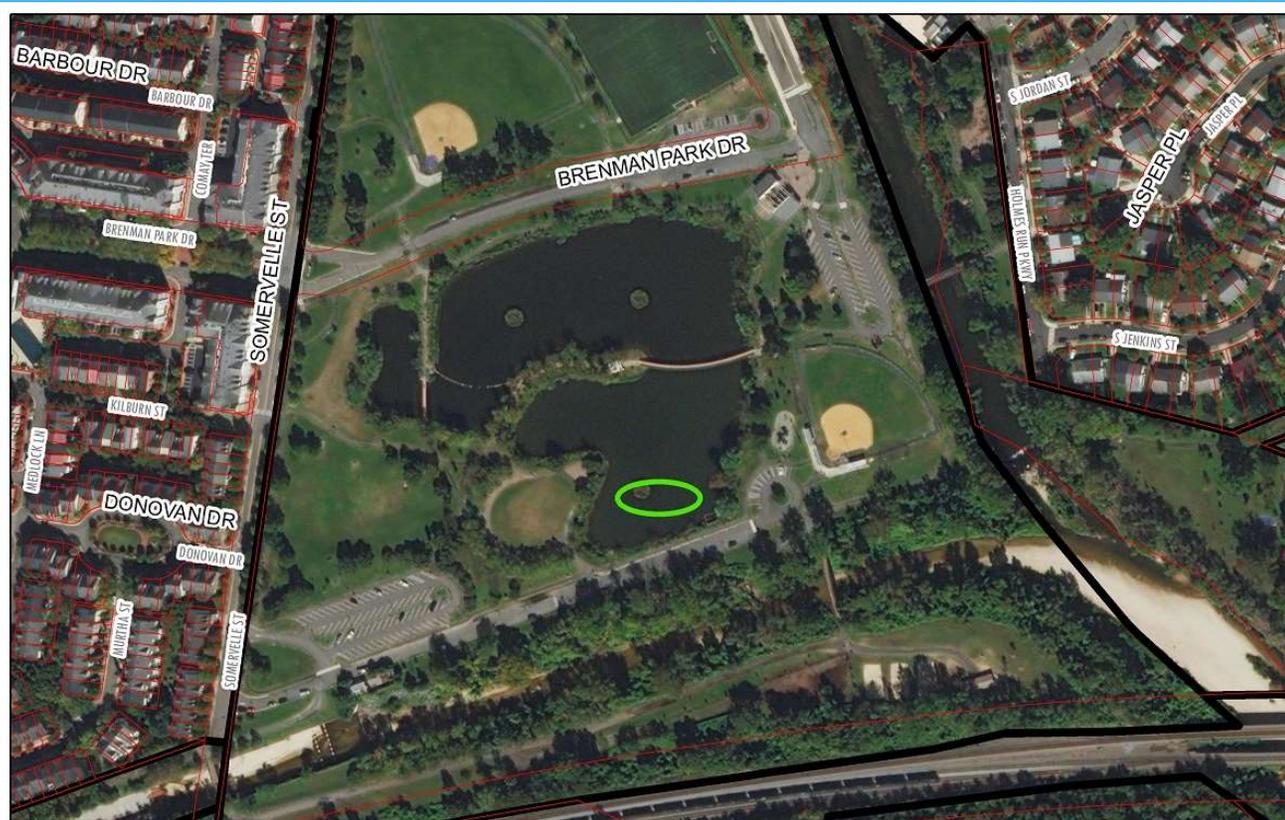


- Ben Brenman Pond: **Medium-term storage** option that preserves the **possibility of future study and/or conservation**
 - Ease of access
 - Potential damage to artifacts can be preemptively mitigated and monitored
 - Low likelihood to affect water quality
 - Lower long-term cost
 - Less City-resource intensive





Historic Ship Timbers Stabilization



- Funding allocated in FY21 CIP Budget
- Contract awarded to AECOM December 2021



Ben Brenman Park

Ship Ponding Location

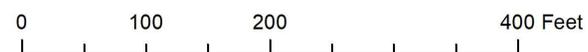


Historic Ship Timbers Stabilization – Interpretation



Ship Ponding Interpretive Sign Locations

Ben Brenman Park



Date: 6/30/2021

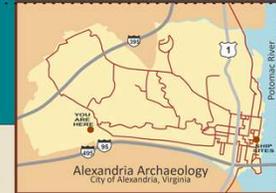
Historic Ship Timbers Stabilization – Interpretation



Crop marks for cutting to 36" x 24" 1/8" thick high pressure laminate

Excavating Historic Ships

Archaeologists excavated four ship hull remnants along the Alexandria waterfront - one from the Hotel Indigo Site (44AX229) and three from the Robinson Landing Site (44AX235). Over 200 years ago, Alexandrians repurposed these old merchant ships to create new land along the Potomac River.



An Underground Fleet

In 2018, archaeologists working at the Robinson Landing Site (44AX235) discovered the remains of three historic ship remnants in the ground. These historic ships provide important information about life in the early Alexandria port.



Archaeologists from Thunderbird Archeology mapped each ship remnant before removal.

Under the City's Archaeological Protection Code, archaeologists recover and preserve what would have otherwise been lost to development.

Thunderbird Archeology, contracted by developers EYA and Carr Properties, found the four ships remnants ahead of construction. This partnership between archaeologists and the public helps discover the city's collective past.



The Changing Waterfront

Early Alexandria's shoreline looked much different than it does today. Free and enslaved laborers working for waterfront landowners created land and reach the deep water of the Potomac River, allowing ships to dock. Wooden structures held this new land in place. Some of these wooden structures included derelict merchant ships, like those now stored in Ben Brenman pond.

Historic map evidence suggests that the two southernmost ships from the Robinson Landing Site become part of this new land between 1798 and 1845. The two northernmost ships, including the one from the Hotel Indigo Site, were buried between 1748 and 1798.



Above: Alexandria waterfront, Elizabeth Luallen. Courtesy of Alexandria Archaeology.

Left: Ship remains (marked in red) were used to create new land. Historic maps from 1748, 1798, and 1845 (marked in shades of green) show this changing shoreline.



Moving Giant Timbers

The remnants of the wooden vessels ranged from 50 feet to 80 feet in length. Once they were uncovered, the wood was kept wet to keep it from cracking. Archaeologists photographed the ships and mapped them in place. Each timber was labeled before being removed.

Underground parking garages now take the place of the ships, but the information they hold about the past is preserved forever.

Left: Archaeologists from Thunderbird Archeology kept the timbers wet once they were exposed to air. Right: Once labeled, each timber was moved from the site to be stored in water.



How do ships become land?

Reusing old ships to create new land was a common practice in the 18th and early 19th centuries. Cities like Boston, New York, Seattle, and San Francisco all used derelict and abandoned ships in this way.

Alexandria's shallow bays were filled in with soil, cobbles, and trash. This fill was held in place by a series of structural walls that kept them from eroding into the Potomac.

Rock walls were used in cities with easy access to stone, and wood was used when lumber was more available. In Alexandria and many other cities, ships that had reached the end of their sailing lives were in the perfect location to be reused as part of the land-making structures.

Bottom right: Digital models of the ships from the Robinson Landing and Hotel Indigo Sites.



CITY OF ALEXANDRIA EST. 1749

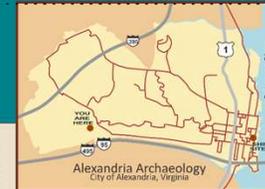
Historic Ship Timbers Stabilization – Interpretation



Crop marks for cutting to 36" x 24" 1/8" thick high pressure laminate

Reconstructing the Past

Archaeologists excavated four ship hull remnants along the Alexandria waterfront - one from the Hotel Indigo Site (44AX229) and three from the Robinson Landing Site (44AX235). Over 200 years ago, Alexandrians repurposed these old merchant ships to create new land along the Potomac River.



Documentation *in situ*

Excavation is a destructive process. Once an object is taken out of the ground, it cannot be put back again. The job of an archaeologist is to first document everything *in situ* so that each object's location, or context, is not lost after excavation.



Photogrammetry model of Feature 155 in the ground before removal. Credit: Oxford Archaeology and R. Christopher Goodwin & Associates.

Digitally Rebuilding the Ships

Researchers used historic research and archaeological documentation to reconstruct the archaeologically recovered ship remnants.

The Conservation Research Laboratory (CRL) at Texas A&M University and Alexandria Archaeology used handheld laser scanners to create digital models of each timber. These scans were combined in a 3D modeling program to reconstruct a digital model of the ship. Missing sections were extrapolated based on historical research to show what the original vessels would have looked like.



Each ship timber was laser scanned (top left), reconstructed digitally, and 3D printed to create a model (above). Credit: Texas A&M University Conservation Research Lab.



Researchers used a 3D printer to make scale models of each ship. Since only portions of the ships were found, wire was added to fill in the remaining structure of each vessel. Archaeologists use these physical models to understand the partial remains and show what these ships would have looked like before they were buried as landfill.

Wood Tells a Story



Most trees create a new layer of growth each year. These growth rings vary in thickness depending on the weather. Patterns of thick and thin rings can show where and when a tree was alive before being cut down to use as lumber. Dendrochronology dates wood by comparing the tree ring sequences of unknown samples, like the ships' wood, to known tree ring sequences.

Samples from each ship were taken and compared with the growth rings of trees from around the world. The Hotel Indigo Ship (44AX225, Feature 53) samples show that its timbers came from Massachusetts sometime after 1741. Samples from the three Robinson Landing Site ships were not conclusive.

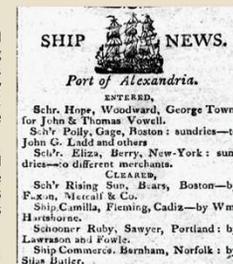
Vince Galacci of Thunderbird Archeology samples timbers from 44AX235, Feature 159. Credit: Michael Worthington, Oxford Tree Ring Laboratory.

Digging into Documents

The names of each ship remain a mystery. Researchers studied the size and shape of the recovered vessels and compared them to documents showing similar ships arriving and departing from Alexandria. Local newspapers, customs records, ship registration forms, logbooks, maps, and property records are all useful sources to learn more about historic ships of this time. These documents helped show what cargo the merchant ships may have carried and what places they may have traveled.

In the late 18th century, Alexandria was a trading partner with the United Kingdom, Germany, France, Italy, Spain, the Caribbean, and ports along the east coast of North America. While newspaper records do not identify ships trading directly between Alexandria and the African continent, Alexandrians were involved in, and heavily profited from, the trade of enslaved people.

Left: The "Ship News" section announced the arrivals and departures of ships. They appeared almost daily in 18th and 19th century Alexandria newspapers. *Alexandria Gazette*, August 17, 1810.



What were the ships used for?

The flat floors and full shape of the ship hulls allowed these merchant ships to carry cargo. By the late 18th century, the Potomac River connected the bustling port city to the world.

Alexandria mainly exported raw goods like tobacco and wheat, and imported manufactured goods from Europe and sugar from the Caribbean. The forced labor and the trade of enslaved individuals formed the foundation of this trans-Atlantic network.

Bottom right: Digital models of the ships from the Robinson Landing and Hotel Indigo Sites.



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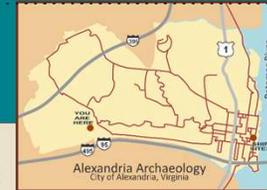
Historic Ship Timbers Stabilization – Interpretation



Crop marks for cutting to 36" x 24" 1/8" thick high pressure laminate

Ponding and Preservation

Archaeologists excavated four ship hull remnants along the Alexandria waterfront - one from the Hotel Indigo Site (44AX229) and three from the Robinson Landing Site (44AX235). Over 200 years ago, Alexandrians repurposed these old merchant ships to create new land along the Potomac River.



Caring for Waterlogged Wood

Waterlogged wood poses unique preservation challenges. These objects keep their shape and structural integrity if they remain wet. If they dry without conservation, the wood will warp, shrink, and crack.



Ship timbers stored in swimming pools at a City facility.

The city first preserved the timbers by storing all four ship remnants in pools of water. For over five years, Alexandria Archaeology staff, interns, and volunteers changed the water each month to reduce biological growth like algae, mold, and mildew. Pools provided a short-term solution, but longer-term options were needed, and the four ships embarked on two different stabilization journeys.

The Preservation Journey

The ship from the Hotel Indigo Site was stored in water before being sent to Texas A&M University for conservation. The three remaining ship remnants from the Robinson Landing Site embarked on a different stabilization journey: preservation in Ben Brenman Pond.



Photo of ships going in pond.

Caption goes here.

In 2021, archaeologists moved the three Robinson Landing ships to this pond as part of a medium-term storage solution. This new destination stabilizes the timbers with less human intervention required.

A team of archaeologists, conservators, and divers worked together to wrap each timber in protective wrapping, transport them to Ben Brenman Park, and then submerge and secure the timbers to a grid on the bottom of the pond.



Locations of the ship timbers are marked in _____. Map courtesy of _____.

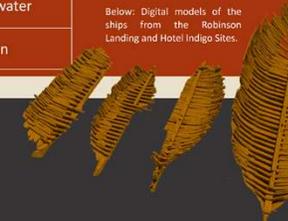
Alexandria Archaeology regularly monitors these important artifacts, ensuring that they have not shifted or deteriorated. Divers dive on the timbers every 5 years to preserve the possibility of future study and conservation.

? Where did the ships go?

The four ship hull remnants are on different stabilization journeys. The ship from the Hotel Indigo Site was conserved, and the three ships from the Robinson Landing Site were preserved. Conservation and preservation both slow the deterioration of an object, but they aren't the same process.

	Conservation	Preservation
Ships	Hotel Indigo Ship (44AX229, Feature 53)	Robinson Landing ships (44AX235, Features 155, 159, & 200)
Method	Mechanical and chemical alteration: Iron is removed, water in the wood is replaced with a waxy substance, and the wood is freeze dried	Maintains existing state: Environmental conditions are controlled and the wood is kept wet by submerging the timbers in water
Goals	Timbers are stable and can be stored, studied, and exhibited without keeping them wet	Less cost and allows for future study and conservation

Below: Digital models of the ships from the Robinson Landing and Hotel Indigo Sites.



CITY OF ALEXANDRIA EST. 1749



Historic Ship Timbers Stabilization

For More Information, visit:

Historic Ship Stabilization: Ship Ponding

<https://www.alexandriava.gov/archaeology/robinson-terminal-south-update-historic-ship-stabilization>

Questions, Comments, Feedback?

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